

**WHAT IS CLAIMED IS:**

**1) An apparatus for launching bottle rockets, said bottle rockets being pressurizable and comprised of a bottle with an exhaust orifice and a bottle neck with a flange and a bottle bottom, said apparatus comprising:**

- a) a support structure;**
- b) a capture and release mechanism;**
- c) a launch actuating device;**
- d) a separation delay device;**
- e) a capture and release fastener;**
- f) a charging station;**
- g) a safety control clip;**

**wherein said support structure is comprised of a plurality of pivotable supports and said capture and release mechanism is mountable and removeable on said support structure and said capture and release mechanism is mountable and removeable on said bottle bottom, said launch actuating device is capable of initiating a launch with said capture and release mechanism, said separation delay device is capable of communication between said capture and release mechanism mounted on said bottle bottom and previous stage bottle rocket, said charging station has liquid propellant and compressed gas inlets and a single outlet, said single outlet is connected to said capture and release fastener, said apparatus launches single-stage or multiple stage bottle rockets.**

**2) The apparatus of claim 1 wherein said support structure plurality of pivotable supports are connected to a support hub by ordinary fasteners.**

**3) The apparatus of claim 2 further including said pivotable supports that are adjustable to vary the launch angle.**

**4) The apparatus of claim 2 wherein said support hub has a central orifice which accepts said launch and release mechanism.**

- 5) The apparatus of claim 1 further including said capture and release mechanism with moveable capture and release cup. Said moveable capture and release cup is moveable between a release position and a capture position.
- 6) The apparatus of claim 1 wherein said launch actuating device is comprised of a simple tether or wherein said launch actuating device is comprised of an electrical or electronic device.
- 7) The apparatus of claim 1 wherein said separation delay device is comprised of a simple tether or said separation delay device is adapted utilizing electrical or electronic means.
- 8) The apparatus of claim 1 wherein said capture and release fastener has internal mechanism to prevent fluid back flow.
- 9) The apparatus of claim 1 wherein said charging station has internal mechanisms to prevent fluid back flow.
- 10)The apparatus of claim 9 further comprising a pressure indicating device mounted on said charging station.
- 11)The apparatus of claim 1 wherein said capture and release mechanism is further adaptable for launching single stage or multiple stage said bottle rockets.
- 12)The apparatus of claim 1 wherein said multiple stage rockets are comprised of said capture and release mechanism mounted on said bottle rocket bottom.
- 13)The apparatus of claim 1 wherein said safety control clip prevents said capture and release mechanism from launching said bottle rocket.
- 14)The apparatus of claim 1 wherein said safety control clip is controllable a safe distance from said pressurized bottle rocket.
- 15)The apparatus of claim 14 wherein the controllability of said safety control clip is a simple tether or by electrical or electronic means.
- 16)An apparatus for capturing and releasing a bottle rocket, said bottle rocket being pressurizable and comprised of a bottle with an exhaust orifice and a bottle neck with a flange and a bottle bottom, said apparatus comprising:
- a) a capture and release core;
  - b) a capture and release cup;
  - c) a flexible retainer mechanism;

wherein said capture and release core is comprised of a central bore, said central bore directs passage of rocket propellant into said bottle rocket, said rocket propellant is comprised of a suitable liquid such as water and compressed gas, said flexible retainer mechanism is comprised of a plurality of flexible extenders, said flexible retainer has a central orifice, said flexible extenders has a top capable of locking and holding said bottle neck flange, said flexible extenders are capable of radial movement, said capture and release cup has a central orifice, said capture and release cup is shiftably moveable to allow or prevent radial movement of said flexible extenders, said capture and release cup has a bevel on the inside upper rim, said bevel aids in movement of said capture and release cup, said flexible retainer mechanism is assembled on said capture and release core, said capture and release cup is assembled on said capture and release core.

17) The apparatus of claim 16 further comprising seal rings mounted on capture and release core.

18) The apparatus of claim 17 wherein the said seal rings prevent leakage of rocket propellant when said capture and release core is inside said bottle rocket orifice.

19) The apparatus of claim 16 further comprising a mountable bottom on said capture and release core.

20) The apparatus of claim 19 wherein said mountable bottom is mountable on said bottle rocket bottom.

21) The apparatus of claim 19 wherein said mountable bottom is mountable on a multiplicity of support structures.

22) The apparatus of claim 16 wherein said bevel communicates with said flexible extenders to aid in downward movement of said capture and release cup.

23) The apparatus of claim 16 wherein said flexible extenders have a top that grips said bottle neck flange.

24) The apparatus of claim 16 wherein said apparatus for capturing and releasing said bottle rocket is operable on single stage rockets or multiple stage rockets.

25) The apparatus of claim 16 wherein said apparatus for capturing and releasing said bottle rocket is operable with multiple rockets in parallel or multiple rockets in parallel that are ganged together as a single rocket.

**26) An apparatus for supporting and coupling a multiplicity of apparatus capable of capturing and releasing a multiplicity of bottle rockets, said bottle rockets being pressurizable and comprised of a bottle with an exhaust orifice and a bottle neck with a flange and a bottle bottom, said apparatus comprising:**

- a) a coupling plate;**
- b) a parallel launch support structure;**
- c) a capture and release central fastener;**
- d) a capture and release peripheral fastener;**

**wherein said coupling plate has a plurality of coupling plate orifices, said coupling plate is capable of accepting an apparatus for capturing and releasing said bottle rockets in said plurality of coupling plate orifices, said parallel launch support structure is fitted with a plurality of support structure orifices, said support structure orifices are capable of accepting an apparatus for capturing and releasing said bottle rocket, said parallel launch support structure has internal charging channel for directing charging fluid to said bottle rockets, said capture and release central fastener has internal channels for directing charging fluid to said support structure central internal radial channels, said capture and release central fastener has internal channels for directing charging fluid to said support structure peripheral channels.**

**27) The apparatus of claim 26 wherein said coupling plate is provided with a single orifice, said single orifice is used as an attachment point for launch release means.**

**28) The apparatus of claim 26 wherein said parallel launch support structure has a plurality of pivotable supports, said pivotable supports are fastened to said support structure with ordinary fasteners, said pivotable supports are capable of adjusting said support structure to change the launch angle.**

**29) The apparatus of claim 26 wherein the parallel launch support structure has internal charging channels are circumferentially placed and internal charging channels that are radially placed from a central point.**

**30) The apparatus of claim 29 wherein the parallel launch support structure internal circumferential charging channel has a lateral port that is connected to an external fluid charging station.**